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Dipartimento Architettura e Territorio

Corso di Laurea magistrale a c.u. in Architettura (Classe LM-4 c.u.)

Degree course	LM4
Course code	
Lecturer	Prof.ssa Consuelo Nava
Course name	Technological Design Culture
Disciplinary area	Tecnology of Architecture
Disciplinary field of science	Icar 12
University credits - ECTS	6
Teaching hours	60
Course year	III
Semester	I

Synthetic description and specific course objectives

The discipline of the Technological Culture of Design (CTP), is to be considered as characterising and foundational with respect to the training course on the themes of the constructability of Architecture and its quality profiles in terms of technical culture, architectural and technological language, innovation and environmental design of resources and performance. It returns as a course in the third year of the degree in Architecture, after its historical courses, in a completely evolutionary and contemporary key, based on the founding matrices within the disciplinary field of Architecture Technology and Environmental Design.
This scientific, disciplinary and trans-disciplinary background, experienced over a period of about twenty years in the practices of sustainable and innovative design, has characterised and directed the discipline of the technological culture of environmental design in Reggio Calabria. The following period, from 2010 to 2020, will confirm its interests and openness, towards even more direct experiences, to the transfer of research in the field of experimental and pre-industrial development. Without the history acquired during the years of activity described above, no evolution would have been possible, capable of interpreting change, in its emergency challenges, from the point of view of the new environmental issues, nor would it have been possible to identify new paradigmatic trajectories, typical of the subsequent "frontier" research. According to this approach, even for the Reggio Calabria site, since the 2000s, the need to entrust the sustainable project to the action of "enabling technologies" has been emerging, in a new technological culture of the project, with the increasingly direct aim of directing applied research towards those design experiments with a strong "proto-typological" character, which will influence the production of quality architecture and its highest performance expressions. (C.Nava, 2019). Therefore, the disciplinary contributions of the CTP are to be considered propaedeutic and characterising for that discipline of reference placed at the end of the course of studies, called Sustainability and Innovation of the Project.

Disciplinary educational objectives - This cognitive and exploratory path, conducted through the CTP, will investigate around three major trajectories and paradigmatic issues of the discipline, contemporary to the debate on the role of architecture, in its relationship between design and construction, as a process of modification of the built environment and method of approach to the configuration of complex spaces and systems at all scales of the project. The first issue addresses the theme of the "complexity of contemporary building", in order to place the role of the relationship between design and construction, between design and production, between spatial, morphological and technological configurations, instructed by the formed and relational processes between the parts and their conditions of response to the demand for use, service, functioning, recognizability of the systems in their final expression.
The second issue, expresses all the characters and terms of the themes of "sustainability as an evolution of environmental design and the design of natural resources", reinterpreting the inter-scalar relationship between operating models and response in impacts, between conditions of quality of space referred to the quality and well-being of its use, in the regenerative capacity to design systems that increase performance, with high levels of innovation and physical and life cycle integration, according to the new environmental instances. The third issue, referring to the "role of innovation in the cultural processes of technology", with reference to the complex and sustainable project (first two issues) and with reference to the evolution of the technical and information culture of the project, to the way in which experimentation and research has

guided the evolution of the production chains of components, materials, systems, together with the evolution of digital processes in all the phases of the process and the project and has made available an increasingly continuous relationship between process, project and product.

Method for the verification of the disciplinary contents - In order to promote a path of in-depth study of the themes, of an exploratory type, in the proposal articulated in the illustrated programme, the cognitive method will be followed, which *foresees theory, design and experimentation*, as an iterative and complete experience for each thematic unit.

Course entry requirements

In order to take the examination in the discipline, students must have taken the examinations in the subject area of Architectural Technology in Years I and II.

Course programme

The course programme is implemented in the first semester, with 12 weeks of activities involving lectures, seminars, applications, exercises and mid-term tests.
The programme contents are divided into three Thematic Units, a prologue and programme unit (P) and a final seminar and collective unit (F)

UT P (lessons and lectures) - The technological culture of environmental design: the discipline, the themes and the programme (1st and 2nd week)
UT 2 (lectures, seminars and experimentation) - (week 3 to week 5)
The complexity of contemporary building (theory, design and experimentation)
UT 3 (lecture, seminars and experimentation) - (from week 6 to week 8)
Sustainability as environmental and resource design (theory, design and experimentation)
UT 4 (lecture, seminars and experimentation) - (wks.9 to 11)
Innovation as a quality of high-performance architecture (theory, design and experimentation)
UT F (lectures and collective seminar) - Complexity, Sustainability, Innovation: CTP explorations (week 12)

Expected results

Each UT includes a pathway for the student to acquire the transferred knowledge, for which bibliographic support, case studies and guidance for the exercise will be provided.
At the end of this exploratory path, students are asked to acquire the disciplinary terms and the issues investigated through lectures, seminars and comparison of the exercises for experimentation.

Course structure and teaching

Lectures (classroom hours/year):20 hrs
Exercises (hrs/year in the classroom):20 hrs
Practical activities (hrs/year in the classroom): 20 hrs

***The tutors of the course are: Arch.PhD Giuseppe Mangano, Arch.PhD student Alessia Leuzzo, Arch. PhD student D.Lucanto, experts of the discipline*

Student's independent work

The student will have to support the cognitive pathway by devoting hours to researching case studies to explore, to carry out guided exercises, in correspondence with each thematic unit proposed and with reference to the bibliography and materials indicated.

Testing and exams

Attendance at the course is compulsory and is certified by the exercise activities at the end of each thematic unit in the programme. There will be a collective discussion at the end of the course, preparatory and admission to the final examination. The final examination for the whole class will be held in the first useful session after the semester of lessons.

Suggested reading materials

Teacher's books

Nava C. (2019), *Ipersostenibilità e Tecnologie abilitanti. Teoria, metodo e progetto,* Aracne ed., Roma
Nava C., (2019), *Design Driven Innovation "off-shore" e "off-site",* Quaderni SID, n.1, Aracne ed., Roma
Nava C., (2019), *Sezioni Sostenibili. Design e Informazioni per il progetto ipertesto,* Aracne ed., Roma
Nava C., (2012), SED_*Sustainable energy design*, ListLab, Trento
Nava C., (2012), *Edifici Sostenibili. Particolari Costruttivi (MANUALE),* DEI ed., Roma

Other teaching material

+ Reports and documents on course topics
+ Other sector bibliography to support lectures, seminars and exercises.
+ Recommended trade journals and open source digital programmes for use as tools